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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/754,018	01/03/2001	Motoshi Ito	YAMAP0748US	3434

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EXAMINER

HENNING, MATTHEW T

ART UNIT

PAPER NUMBER

2131

DATE MAILED: 02/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/754,018	ITO ET AL.	
	Examiner	Art Unit	
	Matthew T Henning	2131	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

This action is in response to the communication filed on 10/22/2004.

DETAILED ACTION

1. Claims 1-9 have been examined.
2. All objections and rejections not specifically set forth below have been withdrawn.

Title

3. The title of the invention is acceptable.

Priority

4. The application has been filed under Title 35 U.S.C §119, claiming priority to Japanese application 2000005501, filed January 14, 2000.
5. The effective filing date for the subject matter defined in the pending claims in this application is January 14, 2000.

Drawings

6. The drawings filed on 01/03/2001 are acceptable for examination proceedings.

Specification

7. The examiner would like to note the applicant's choice to be his own lexicographer for the term "descramble" which the applicant defines as "processing of creating a concealed program" on lines 22-23 of page 8 of the disclosure.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2131

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 3, and 6-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirotani (U.S. Patent Number 5,982,887) hereinafter referred to as Hirotani.

10. Claim 1 recites a control program for controlling an operation of a microprocessor (See Hirotani Col. 4 Paragraph 3), the control program comprising a concealed program (See Hirotani Col. 3 Paragraph 7), recoverable by data scramble circuit (See Hirotani Col. 3 Paragraph 8) and a non-concealed program (See Hirotani Fig. 1 Element 15 wherein only part of the program is encrypted).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 3, and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirotani, and further in view of Schneier (Applied Cryptography).

13. Regarding claim 1, Hirotani disclosed a control program for controlling an operation of a microprocessor (See Hirotani Col. 4 Paragraph 3), the control program comprising a concealed program (See Hirotani Col. 3 Paragraph 7), recoverable by data scramble circuit (See Hirotani Col. 3 Paragraph 8) and a non-concealed program (See Hirotani Fig. 1 Element 15 wherein only

Art Unit: 2131

part of the program is encrypted). However, Hirotani failed to disclose the data scramble circuit being a hardware circuit.

Schneier teaches that encryption and decryption can be performed in a hardware circuit (See Schneier Pages 223-225).

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Schneier in the decryption system of Hirotani by providing a hardware decryption circuit to be used in place of the CPU decryption. This would have been obvious because the ordinary person skilled in the art would have been motivated to increase the speed of the decryption, increase the security of the decryption, ease in the installation of the decryption method, and increase the efficiency of the CPU.

14. Regarding claim 3, the combination of Hirotani and Schneier disclosed a device, comprising: a microprocessor (See Hirotani Fig. 3 Element 21), a program memory for storing a control program for controlling an operation of the microprocessor (See Hirotani Fig. 3 Element 25), the control program including a concealed program (Element 25 Encrypted Section) and a non-concealed program (Element 25 Program section); a rewritable memory for storing a copy of the concealed program copied from the concealed program stored in the program memory (See Hirotani Col. 6 Paragraph 2 and the rejection of claim 1 above wherein it was inherent that the encrypted program was stored, at least temporarily in a rewritable memory in the decryption circuit, before decryption), and a data scramble circuit for recovering the concealed program stored in the rewritable memory as a recovered program (See Hirotani Col. 6 Paragraphs 2-3 and the rejection of claim 1 above), wherein the data scramble circuit is a hardware circuit (See the rejection of claim 1 above).

15. Regarding claim 6, the combination of Hirotani and Schneier disclosed a method for creating a control program, comprising: a program descramble step of descrambling a portion of a control program by reverse scramble of a data scramble circuit in a device to be controlled, thereby creating a concealed program as a portion of the control program (it was inherent in the invention of Hirotani that a portion of the control program was encrypted in order for the control program to have taken on the form of Element 25 in Fig. 3); and a program storing step of storing the control program including the concealed program in a program memory so that the control program controls an operation of a microprocessor in the device to be controlled (See Hirotani Col. 5 lines 39-44), wherein the data scramble circuit is a hardware circuit (See the rejection of claim 1 above).

16. Regarding claim 7, the combination of Hirotani and Schneier disclosed that the program descramble step includes the steps of: creating a non-concealed program (it was inherent that the program was created at some point in order for the program to have been encrypted and downloaded); and synthesizing the concealed program and the non-concealed program into the control program (See Hirotani Fig. 3 Element 25 wherein the encrypted and non-encrypted programs are together as the program stored in program memory).

17. Regarding claim 8, the combination of Hirotani and Schneier disclosed a method for operating a control program, comprising: a program copying step of copying a concealed program which is a portion of the control program (See Hirotani Fig. 3 Element 25) from a program memory into a rewritable memory (See rejection of claim 3 above); a program recovery step of recovering the concealed program copied by the program copying step as a recovered program by a data scramble circuit (See rejection of claim 3 above); and a program execution

Art Unit: 2131

step of executing a non-concealed program included in the control program and the recovered program (See Hirotani Col. 6 Paragraph 5), wherein the data scramble circuit is a hardware circuit (See the rejection of claim 1 above).

18. Regarding claim 9, the combination of Hirotani and Schneier disclosed a program erasure step of erasing the recovered program from the rewritable memory (See Hirotani Col. 6 Paragraph 6).

19. Claims 2, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hirotani and Schneier disclosed as applied to claims 1 and 3 respectively above, and further in view of Oualline ("Practical C++ Programming") and Ooi et al. (U.S. Patent Number 5,226,129) hereinafter referred to as Ooi.

The combination of Hirotani and Schneier disclosed a recoverable encrypted program to be run on a microprocessor (See rejection of claim 1 above) but Hirotani failed to disclose the composition of the program as well as the addressing mode of the program. However, Hirotani did disclose that the encrypted program could have been downloaded over a network (See Hirotani Col. 3 Lines 27-29).

Oualline teaches that in order to conserve memory space, commonly used code can be grouped into functions such that the code can be used repeatedly (See Oualline Page 133 Paragraph 1).

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Oualline to create functions in the encrypted program of Hirotani and Schneier. This would have been obvious because the ordinary person skilled in the art would have been motivated to make the program as compact as possible in order to conserve

Art Unit: 2131

memory and also to limit the amount of information needing to be transferred over the network to the system of Hirotani.

Ooi teaches that in order to easily make a program portable, the program should use relative addressing (See Ooi Col. 1 Lines 27-33). This would have been obvious because the ordinary person skilled in the art would have been motivated to minimize the modification of the code required to relocate the program, and thus increase portability.

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Ooi in the program of Hirotani and Schneier by providing the program with relative addressing.

It was inherent in the combination of Hirotani, Schneier, Oualline, and Ooi that relative address lists for the functions of the program were provided in the program at prescribed, or predetermined, location, in order for the processor of Hirotani to be able to locate the functions called throughout the program.

20. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hirotani and Schneier as applied to claim 3 above, and further in view of Smith (Memory error Detection and Correction).

The combination of Hirotani and Schneier disclosed a system for recovering and executing an encrypted program (See rejection of claim 3 above), but failed to disclose error correction during decryption. However, Hirotani and Schneier did disclose that the encrypted program was stored in a memory (See Hirotani Col. 3 Line 30).

Art Unit: 2131

Smith teaches that error correction codes (ECC) in a storage system can be used to not only detect errors, but to also correct errors in the stored data words (See Smith Page 1 Paragraph 7).

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Smith in the invention of Hirotsu and Schneier by providing error correction codes to each word in the program, and using the microprocessor to detect and correct errors in the program using the ECCs. This would have been obvious because the ordinary person skilled in the art would have been motivated to ensure that the integrity of the program in memory was maintained.

Response to Arguments

21. Applicant's arguments filed 10/22/2004 have been fully considered but they are not persuasive.

22. Applicant traverses primarily that the scramble circuit of Hirotsu was a software circuit and not a hardware circuit.

23. Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

24. Claims 1-9 have been rejected.

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2131

- a. Lumley (U.S. Patent Number 4,306,289) disclosed a computing system capable of executing encrypted program code.
- b. Curran et al. (U.S. Patent Number 4,525,599) disclosed a system for protecting software by using an encrypted addressing mode as well as program encryption.
- c. Kulakowski et al. (U.S. Patent Number 5,394,534) disclosed a data compression system utilizing error correction codes.
- d. Ronning (U.S. Patent Number 5,870,543) disclosed a software protection system utilizing an encrypted program package.
- e. Ashe (U.S. Patent Number 6,014,745) disclosed a method for protecting proprietary programs and data utilizing encryption and key cards.

26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 2131

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew T Henning whose telephone number is (571) 272-3790. The examiner can normally be reached on M-F 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Matthew Henning
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Art Unit 2131
2/8/2005



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